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19. *ECHIS* IN TAMIL NADU

In a 2 m × 2 m × 1½ m concrete sided pit we had been housing about 30 *Echis carinatus* with pond, rocks, cacti and grass. When dry, the smooth pit walls are the barriers that we know from experience will safely contain "all" snakes under a certain length. When the walls are wet from rain however, we were surprised to see that *Echis* are able to slowly edge their way up the sheer wall. It seems that the suction created by their numerous ventral scales allows smaller and thinner (light) *Echis* to climb the 1½ metre wall in about 1 hour. This not to suggest that *Echis* habitually climbs smooth walls (i.e. houses etc.) as they will certainly follow the easiest route of travel.

Though *Echis* is essentially a ground viper and is collected in its northern range in India under rocks etc., in the south they seem to spend a large part of their time up in thorn bushes, cacti, century plants, in palmyra bark and even casurina trees and thatch roofts. This climbing trend is especially obvious during the rains when we find 80 per cent above ground in bushes and 20 per cent in and under stones, grass tufts, and very rarely in holes.

Echis are common in almost any part of Tamil Nadu that is dry and rocky and/or sandy. They are found in no forests except scrub jungle areas. The average length of *Echis carinatus* in the south is under 250 mm and is lighter in colour, more yellowish than the northern race or sub-species. Though bites are common (we treated 14 cases in the 3 months of July, August, September in a small rural area south of Madras in 1970) fatalities are very rare due to the snakes small size and effectiveness of antivenom serum.

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August 1973.

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20. ON THE FISHES OF THE GENUS *CTENOPS* McCLELLAND (1845)

During a study of the fishes of north Bihar (India) a well preserved specimen of *Ctenops nobilis* McClelland, from the collections of Zoological Survey of India, was noted. On comparison with the identified

material in Z.S.I. it revealed some distinct differences but as a solitary specimen it is not possible to give it a separate specific or subspecific status at present. A thorough examination of the material of the genus was done in this connection, and a detailed description of the species is given as the description given by McClelland (1845) is very brief.

McClelland (1845) proposed the genus *Ctenops* for an elegant anabantid fish from the rivers of Sikkim passing on northern frontiers of Bengal and described under it a species *C. nobilis*. Day (1877) synonymised *Ctenops* of McClelland with genus *Osphronemus* (Commerson) Lacépède (1801), changed the spelling of *Osphronemus* to *Osphromenus*. Day (1877), and Regan (1909) considered *Trichopsis* (Kner) Contestrini (1860), as a junior homonym of *Ctenops* McClelland, (1845) and other authors put *T. vittatus* under genus *Ctenops*.

However, Myers (Herre & Myers 1937) pronounced that the *C. nobilis* and *C. vittatus* have generic differences and proposed to retain genus *Trichopsis* (Kner) Contestrini for the latter. This taxonomic change has also been adopted by Smith (1945) and Forselius (1959) who thought it more appropriate to describe the Indian genus *Ctenops* as monospecific.

In the classification of the Teleostean fishes, Regan (1909) and Weber & deBeaufort (1922) placed anabantoidei as a suborder of the order Labyrinthici. Berg (1940) and Greenwood *et al.* (1966) considered the association of these two groups as unnatural and their resemblance as due to convergence and transferred Anabantoidei as a Suborder of order Perciformes.

Genus *Ctenops* McClelland

1845. *Ctenops* McClelland, *Calcutta J. nat. Hist.* 5, p. 281. (Type Species: *C. nobilis* McClelland).

Description

Body oblong, compressed. Head acute. Snout equal or longer than the diameter of the eyes; lower margin of the enlarged lacrimal and the angle and lower margin of preopercle denticulated; premaxillaries and denture with bands of small teeth; no teeth on the vomer and palatine; peripheral teeth enlarged; upper jaw protrusible; dorsal with 4-7 spines and 6-8 rays and inserted almost above the middle of soft anal; anal with 4-5 spines and 23 to 28 rays; median fins scaly at the base; ventrals inserted a little in advance of the pectorals, each with a strong spine and 5 rays, the first ray produced into a filament; scales arranged in regular rows. Those on body ctenoid while the one on head may or may not be ctenoid. Lateral line vestigial. The swim bladder extends into caudal region of the body.

Distribution: Confined to Assam, Bengal and Bihar.

Ctenops nobilis McClelland

1845. *Ctenops nobilis* McClelland, *Calcutta J. nat. Hist.*, 5, p. 281, pl. 21, fig. 1.
(Type Loc.—Rivers of Sikkim passing on N. Frontiers of Bengal)
1849. *Trichopodus nobilis* Cantor, *J. Asiat. Soc. Bengal*, 18, p. 211.
1869. *Osphromenus nobilis* Day, *Proc. zool. Soc.*, London, p. 519.
1877. *Osphromenus nobilis* Day, *Fishes of India*, p. 372, pl. LXXVIII, fig. 5.
1909. *Ctenops nobilis* Regan, *Proc. zool. Soc.*, London, II, p. 777.
1922. *Ctenops nobilis* Weber & deBeufort, *Fish. Indo-Aust. Archpel.* 4, p. 1352.
1937. *Ctenops nobilis*, Shaw & Shebbeare, *J. Asiat. Soc. Bengal* 3, p. 113, fig. 118.

MATERIAL

- a) Z.S.I. Regn. No. Cat. 333, Purnea, Bihar, Dr. Jerdon, one example 53 mm. Standard Length.
- b) Z.S.I. Regn. No. Cat. 334, Dacca, Mus. Collector, One example 57 mm. S.L.
- c) Z.S.I. Regn. No. 1565, Assam, Purchased from Dr. F. Day (original of Pl. LXXVIII, fig. 5 of *Fishes of India*), one example, 60 mm. S.L.
- d) Z.S.I. Regn. No. 13343-45. Jessore Jheel, E. Pakistan, J. Wood Masson & Alcock, 3 exs. 41-66 mm. S.L.
- e) Z.S.I. Regn. No. 7866-67. Dibrugarh, Dr. S. W. Kemp, 2 exs., 42-56 mm. in S.L.
- f) Z.S.I. Regn. No. F 11425/1, Siliguri, N. Bengal, Messrs C. E. Shaw & E. O. Shebbeare, One exam., 60 mm. S.L.
- B, VI, D. 4-6/6-8, P. 13, V. 1/5, A. 4-5/23-28, C. 16, Ll. 28-34. Ltr. 6/12.

A small elegant anabantid with body laterally flattened. Dorsal profile rises immediately behind the nape to the origin of the dorsal after which it descends down to the base. Ventral profile—likewise descends sharply from the mandibular edge to the origin of the anal fin after which it ascends gradually up to the base of the caudal. Head length 2.62 to 3.0 in the standard length. Eyes prominent lateral. Diameter of eyes 3.2 to 3.8 times the length of the head. Snout longer than diameter of eye. Snout dorsally convex and anteriorly flat and blunt. Diameter of eye 0.75 to 0.98 times snout length. Interorbital space almost flat and width more than length of snout. Nostrils paired, separated by a flat internarial membrane, nearer to eye than tip of the snout; gape wide. Lower jaw elongated to form a somewhat pipe shaped mouth. Lower jaw longer than upper; upper jaw portrusible.

Day (1877) and Weber & deBeufort (1922) stated that the end of intermaxillaries (premaxillaries) extends opposite to front border of the orbit. The intermaxillaries (premaxilla) do not extend to opposite the front border of the orbit in any of the examples studied here. The premaxillaries form the upper jaw and are broadened medially and narrow distally. The broad medial ends are produced backward into a rod like bony process; the two processes of either side lie opposed to each other

and conjointly form a medio-posterior process of the upper jaw and help in the protrusion and retraction of the upper jaw. These processes lie beneath the nasals. The underside of the premaxillaries bears a wide band of villiform teeth which are enlarged on the periphery. Maxillaries are toothless. Distal ends of the premaxillaries and the maxillaries lie close to each other, that of maxillary being on the outside. The distal tip of maxillary is flattened.

The whole of maxillary and the distal part of the premaxillaries lie in a groove formed below the enlarged lachrymal (Preorbital of Day 1877, Regan 1909, and Weber & deBeaufort 1922). The outer border of the lachrymal is toothed. The toothed band on the mandibles is of a similar nature as that of the upper jaw and has a series of enlarged peripheral teeth. The groove below the lachrymal extends on underside of the mandibles but the two sides do not meet below the mandibles. The lower lip is enlarged on the lateral side where it covers the retracted parts of the maxillaries.

Dorsal short, its origin lies about nearly the middle of the soft portion of the anal. Length of the base of the dorsal lies 4.4 to 6 times in the St. length whereas that of the anal base is 1.7 to 2.1 times.

Length of pectoral equal to half that of head or in some examples even somewhat less. Pelvics inserted a little in advance of the pectorals. Spine of the ventral strong and the outermost ray prolonged to varying lengths in all the examples studied here. Length of pelvic spine lies 2.0-2.48 times in length of head.

Except the naked part of the upper lip and the ventral side of the lower jaw, the whole body is covered by scales. The scaly sheath extends onto the basal part of the median fin. The lateral line is but slightly visible and irregularly pierces the scales. The scales of the body are more or less rectangular with the posterior margin convex and beset with ctenes. The scales on the head may be smooth edged or minutely ctenoid. There are 28-34 scales along the lateral line while six above it and 12 below.

Coloration:

Colour in spirit brownish. A white band extends from behind the posterior border of orbit and runs uninterrupted below the lateral line upto opposite end of spiny portion of anal fin and thereafter to the base of the caudal in the form of white patches. Another interrupted white band originates from the area between the bases of the pectoral and pelvic fins and extends upto the middle of the soft portion of the anal. A third similar band extends upto the middle of the soft portion of the anal. At the upper part of the base of caudal there is a light edged dark brown ocellus. The ventral side of the head and abdomen are banded alternatively brown and white.

Ctenops sp.

The solitary specimen collected from Bettiah, Bihar, resembles *C. nobilis* in general but shows a few important differences as shown in the table below. It has been compared with specimens of similar length from Dibrugarh (Assam), Jessore Jheel (Bangladesh) and the differences are constant. The main differences being in the depth of body, the height of head at occiput and the length of the pelvic spine.

<i>Ctenops</i> sp.	<i>Ctenops nobilis</i> McClelland.
The depth of the body is less than the length of the head. (Being 1-2 times).	The depth of body either equal or more than the length of head. (Being 0.88-1 times).
The depth of body 3.4 times in standard length.	The depth of body is 3 or less than 3 times in standard length.
The height of body at caudal base lies 1.8 times in height of body.	The height of body at caudal base lies 2-2.6 times in the height of body.
The height of head at occiput is 1.1 times of the depth of body.	The height of head at occiput is 1.3 to 1.9 times in depth of body.
The length of pelvic spine goes 1.87 in length of head.	The length of pelvic spine goes 2.0-2.78 times in head length.
Snout is not longer than eye.	The snout is longer than eye.

ACKNOWLEDGEMENTS

I am grateful to Dr. A. G. K. Menon, Superintending Zoologist, Zoological Survey of India, Calcutta, for his constructive criticism and valuable help.

Thanks are also due to the Director, Zoological Survey of India, Calcutta for facilities provided.

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21. AN INTERESTING CASE OF FISH SPAWNING IN AN OVERCROWDED NURSERY POND

Dubey & Tuli (1961) were the first to record the spawning of Indian major carps in standing water without any flow in two wet bundhs, namely Nagda and Bilaoli reservoirs, of Madhya Pradesh on sandy-clay and stony embankments respectively. Alikunhi *et al.* (1964) recorded major carps spawning in Neorapahari Tallaiya, an ordinary 0.08 ha pond with rocky embankments and sandy-silt bottom, near Nowgong (M.P.). The breeders were stocked in this pond from a nearby tank for induced breeding experiments about 10 days after the accumulation of fresh rain water. They also reported the spawning of catla, rohu and mrigal, soon after fresh rain water had collected, in two typical nursery-cum-rearing ponds (0.08 ha) at Jagatsagar (Nowgong, M.P.) with sandy substratum. There was no flow of water in any of these ponds. A similar case of spawning in a nursery pond, with standing water, at the Experiment Station, Adhartal Lake, Jabalpur, is reported here.

The 0.04 ha nursery pond (25 × 16 × 1.5 m) has been in use for fry rearing for over ten years in connection with the fisheries development programme in the Adhartal Lake (16 ha). This nursery normally dried up during summers but after the 1968 fry rearing season was over, some 500 rohu and 200 mrigal fingerlings, left behind in the nursery, continued to be reared in the pond, with the idea of raising a stock of breeders in the nursery itself. The nursery was filled with lake water at least thrice between February and June each year for the continued rearing of this stock. Between October 1969 and June 1971, the pond was stocked with common carp (*Cyprinus carpio* var. *communis*; 110 mm/25 gm), grass carp (*Ctenopharyngodon idella*, 82 mm/8gm), silver carp (*Hypophthalmichthys molitrix*, 118 mm/11 gm), prawns (*Macrobrachium malcolmsonii*, 55 mm) and mahseer (*Tor tor*, 100 mm) fingerlings. Wild spawning of common carp was recorded in the pond